## ABSTRACT

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The present invention relates to a method of diagnosing a fault on a transformer winding by using frequency response analysis. The method comprises the steps of: measuring the impedance on said winding as a function frequency, φĒ said measurement represented in the form of a first voltage gain; comparing said impedance measurement with a reference measurement represented in the form of a second voltage gain, said comparison including a step of calculating first parameters, each of said three first parameters being a correlation coefficient, between said first and second gains over three different frequency ranges. The method further comprises a step of determining the relative variation of at least a fourth parameter, said fourth parameter being a physical magnitude characteristic of said transformer, relative variation being obtained by comparing said first and second gains.